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CLAIMS

[Claim(s)]
[Claim 1] The control unit which has the input function of actuation information at least, and the mechanism section which operates based on the actuation information from said control unit, It connects with the processor equipped with the control section which controls the mechanism section based on the actuation information from said control unit. It is test equipment which tests the software which operates on said processor. It has false mechanism equipment which constituted the function of said mechanism section from software without real actuation. Said false mechanism equipment Test equipment characterized by having the function which performs actuation which inputted the test data from the test-data file prepared beforehand, and was directed by said command, and outputs the data of an activation result to an activation result file when the command which said control section published is received.
[Claim 2] It is test equipment according to claim 1 characterized by to have the function transmit the actuation information which it had control unit vicarious-execution equipment which has the false control unit which constituted the function of said control unit from software without real actuation, and said control unit vicarious-execution equipment inputted the input data from the input data file prepared beforehand, displayed on the screen, and was directed on said screen to said control section.
[Claim 3] Said false mechanism equipment is test equipment claim 1 characterized by comparing the data of said activation result file with the data of the master file prepared beforehand, and having the function to judge the justification of an activation result, or given in two...

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] It connects with Consumer Transaction Facility, such as various equipments (Automatic Tellers Machine), for example, ATM used in a financial institution, equipped with the mechanism section (device section), the control section, and the control unit that an operator etc. operates, and CD (Cash Dispenser), and this invention relates to the test equipment which tests software (program) which operates on said Consumer Transaction Facility.
[0002]
[Description of the Prior Art] Drawing 13 is the explanatory view of the conventional example. When the software (program) which operates on the processor (for example, ATM) equipped with a control unit, the mechanism section which operates based on the actuation information from said control unit, and the control section which controls the mechanism section based on the actuation information from said control unit was tested conventionally, it was carrying out as follows.
[0003] When the software which operates on said processor was developed newly, or when a part was changed (a functional addition, failure correction, etc.), the justification of software needed to be verified and it was testing using actual equipment.
[0004] For example, said processor (for example, ATM) was equipped with the mechanism section 4 which consists of two or more mechanism sections (device section), the control section 3, and the control unit 2 which consists of two or more control units, it tested using this processor and the justification of said software was verified. The procedure of a test is as follows.
[0005] (1) : after inputting the software for a test (program) into a control section 3, by operating a control unit 2 toward a processor, an operator inputs the data of a test entry and operates a processor.
[0006] (2) : in a processor, the mechanism section 4 operates because a control section 3 controls mechanism section 4 ** based on the actuation information from a control unit 2, and the mechanism section 4 performs predetermined processing directed from the control section 3. And the printout of the data of said processing result is carried out to a print form according to a printing mechanism, or said data are displayed on a control unit 2 on the screen of the delivery control unit 2 from a control section 3.
[0007] (3) : an operator checks the processing result of the mechanism section 4 by viewing by the indicative data of said printing information and screen.
Although the justification of software is verified with the above procedure, when small-scale reconstruction arises for software for example, or even when reconstruction arises in a control unit 2 and the mechanism section 4, in order to test the target software, an operator repeats the same processing as said processing, and performs it.
[0008]
[Problem(s) to be Solved by the Invention] The following technical problems occurred in the above conventional things.
(1) : when software was tested conventionally, it was testing using the mechanism section of actual

equipment. For this reason, when a part of mechanism section was changed, the equipment for a test newly had to be arranged.
[0009] (2) : when the test accompanying modification of small-scale reconstruction of software or a control unit, and the mechanism section was performed, even if it was the same part as modification before, it needed to test by the operator having operated actual equipment like the case where software is developed newly, and had taken much time and effort and time amount.
[0010] This invention solves such a conventional technical problem, and it aims at the ability to be made to perform the test of software through a help while being able to be made to perform the test of software without being dependent on the actual mechanism section.
[0011]
[Means for Solving the Problem] Drawing 1 is the principle explanatory view of this invention. This invention was constituted as follows in order to attain the aforementioned purpose.
(1) : while equipping test equipment with the control unit vicarious execution equipment 20 which has a false control unit, and the false mechanism equipment 21 which has a false mechanism, it had the input data file 22, the test-data file 23, and the activation result file 24. And when said test equipment was connected to a processor, it constituted so that said control unit vicarious execution equipment 20 and false mechanism equipment 21 might be connected and informational transmission and reception could be performed to the control section 3 of a processor.
[0012] Moreover, said test equipment was constituted as follows.
: (2) The control unit which has the input function of actuation information at least, and the mechanism section which operates based on the actuation information from said control unit, It connects with the processor equipped with the control section 3 which controls the mechanism section based on the actuation information from said control unit. It is test equipment which tests the software which operates on said processor. It has false mechanism equipment 21 which constituted the function of said mechanism section from software without real actuation. Said false mechanism equipment 21 When the command which said control section 3 published is received, actuation which inputted the test data from the test data file 23 prepared beforehand, and was directed by said command was performed, and it has the function which outputs the data of an activation result to the activation result file 24.
[0013] (3) : it had control unit vicarious-execution equipment 20 which has the false control unit which constituted the function of said control unit from software without real actuation in said test equipment, and said control unit vicarious-execution equipment 20 inputted the input data from the input data file 22 prepared beforehand, displayed it on the screen, and is equipped with the function transmit the actuation information directed on said screen to said control section 3.
[0014] (4) : in said test equipment, false mechanism equipment 21 compares the data of said activation result file 24 with the data of the master file prepared beforehand, and is equipped with the function to judge the justification of an activation result.
[0015] (Operation) The operation of this invention based on said configuration is explained based on drawing 1 . First, control unit vicarious execution equipment 20 reads the input data of the input data file 22, and inputs into a false control unit. At this time, the information on a false control unit is displayed on a screen based on input data by the false control unit. And if an operator issues directions on a screen, actuation information will be transmitted to a control section 3 from control unit vicarious execution equipment 20.
[0016] The control section 3 which received said actuation information publishes a command based on said actuation information, and transmits to false mechanism equipment 21. The false mechanism equipment 21 which received said command inputs a test data automatically from the test-data file 23, and sends it to an internal false mechanism. Said false mechanism performs processing directed by said command using said test data.
[0017] And the data of an activation result are stored in the activation result file 24. Then, false mechanism equipment 21 compares the data of the activation result stored in the activation result file 24 with the data of the master file prepared beforehand. Consequently, if both are in agreement, a

verification result will judge with normal (O.K.), but when both differ, a verification result judges with abnormalities (NG) and transmits the information on the judgment result to a control section 3.
[0018] Moreover, the information on said judgment result is outputted by printing or the screen display with test equipment. In addition, when a verification result is judged to be abnormalities (NG), it is notified to control unit vicarious execution equipment 20 via a control section 3, control unit vicarious execution equipment 20 inputs the following input data from the input data file 22, and said processing is continued. The test of software can be performed without being dependent on the actual mechanism section as mentioned above. Moreover, the test of software can be performed through a help.
[0019]
[Embodiment of the Invention] Hereafter, the example of this invention is explained based on a drawing.
**1: Explanation of the equipment for a test ... Drawing 2 reference drawing 2 is the block diagram of ATM. This example explains ATM (Automatic TellersMachine) as equipment for a test. This ATM consists of a control unit 2, a control section 3, and the mechanism section 4.
[0020] And the control unit 2 consists of official-in-charge control units (it is described as "MOP" below) 11 with the customer actuation unit (it is described as "UOP" below) 10. Moreover, the control section 3 consists of a station controller control section (it is described as "SC control section" below) 7, I/O control unit (it is described as "IO control section" below) 8, and an operation control section (it is described as "OP control section" below) 9.
[0021] Furthermore, the mechanism section 4 consists of card reader writer image reader printer unit (it is described as "CIP" below) 15 grades with the bill recycle unit (it is described as "BRU" below) 12, the coin recycle unit (it is described as "CRU" below) 13, and the passbook printer unit (it is described as "PPR" below) 14. The function of said each part etc. is as follows.
[0022] (1) : UOP10 is an actuation unit operated in case a customer pays and it trades in deposit, transfer, etc., for example, is equipped with the touch panel.
(2) : in case an official in charge etc. performs maintenance of ATM, check, etc., operate MOP11.
[0023] (3) : the SC control section 7 controls the whole ATM (main control section).
(4) The :IO control section 8 performs interface control of the I/O to the mechanism section 4.
[0024] (5) The :OP control section 9 controls UOP10 and MOP11.
(6) : BRU(s)12 are expenditure of a bill required for dealings, and a unit which performs making a deposit.
[0025] (7) : CRU(s)13 are expenditure of a coin required for dealings, and a unit which performs making a deposit.
(8) :P. PR14 print dealings data etc. in the dealings passbook inserted from insertion opening. Moreover, in this PPR14, reading of a printable line count in which the processing which reads a magnetic stripe in said passbook, or a passbook remains is also performed.
[0026] (9) : CIP15 processes reading of a magnetic stripe, writing to a magnetic stripe, reading of the embossing section, etc. to the various transaction cards inserted from the card entrance. Moreover, in CIP15, printing of the contents of dealings to a receipt/journal paper etc. is performed.
[0027] **2: Explanation of test equipment ... Drawing 3 reference drawing 3 is the equipment explanatory view of an example. In this example, the software (program) which operates on ATM with test equipment is tested. For example, when the software (program) which operates by ATM is developed newly, or when a part of software is changed (or reconstruction), said program needs to verify whether it operates correctly on actual ATM, and tests with the test equipment explained below for said verification.
[0028] Said test equipment consists of control unit vicarious execution equipment 20 and false mechanism equipment 21, for example, software without real actuation realizes it on a personal computer. Moreover, test equipment is equipped with the input data file 22, the test-data file 23, and the activation result file 24, and it is constituted so that data may be outputted and inputted by these files. In addition, said file consists of a hard disk (magnetic disk), a flexible disk (floppy disk), etc.

[0029] false [which created said UOP10 and MOP11 in false to said control unit vicarious execution equipment 20] -- false [which has formed UOP and false / MOP / (what created all by the program), and created each mechanism of said mechanism section 4 in false to false mechanism equipment 21] -- BRU and false -- CRU, false [PPR], and false -- CIP etc. is prepared (mechanism who created all by the program).
[0030] Furthermore, a control section 3 consists of an SC control section 7, an IO control section 8, and an OP control section 9, and uses the software for a test for these control sections. Although said test equipment is connected to ATM when testing software using said test equipment (personal computer), control unit vicarious execution equipment 20 is connected to the OP control section 9 in this case, and false mechanism equipment 21 is connected to the IO control section 8.
[0031] In addition, you may realize to the field to which it differs on the same personal computer, and control unit vicarious execution equipment 20 and false mechanism equipment 21 may be realized on another personal computer. Moreover, various kinds of actuation information (false UOP, the information on which it displays false [MOP], coordinate data of the key of said screen, etc.), dealings information, etc. are stored in the input data file 22 as input data required to operate control unit vicarious execution equipment 20.
[0032] Passbook information, card information, mechanism section specification information, bill information, coin information, and the information on other are stored in the test-data file 23 as data required to operate false mechanism equipment 21. Moreover, the activation result file 24 stores a passbook, a receipt, the printout data of a journal, etc. as activation result data of false mechanism equipment 21 by the test.
[0033] **3: Explanation of false mechanism equipment ... Drawing 4 reference drawing 4 is the explanatory view of false mechanism equipment. above -- false mechanism equipment 21 -- false -- BRU and false -- CRU, false [PPR], and false -- false mechanisms, such as CIP, are prepared. Since each false mechanism of this false mechanism equipment 21 is not an actual mechanism but the thing created in false with software (program), although the interface between a control section 3 and false mechanism equipment 21 is the same as the control section 3 of ATM, and the interface between the mechanism sections 4, it is not accompanied by real actuation.
[0034] It connects with the IO control section 8 of a control section 3, and this false mechanism equipment 21 transmits and receives a command/response through the IO control section 8. In this case, said command/response hold the same interface as the interface between the control section 3 in actual ATM, and the mechanism section 4.
[0035] Moreover, with false mechanism equipment 21, if the command from a control section 3 is received, a test data will be automatically read from the test-data file 23, and actuation of a false mechanism will be performed. And the data of an activation result are automatically outputted to the activation result file 24.
[0036] Moreover, false mechanism equipment 21 is equipped with the function in which a verification result judges the data of the activation result stored in the activation result file 24 to be abnormalities (NG) when a verification result judges with normal (O.K.) and both differ, if both are in agreement as compared with the data of the master file prepared beforehand, in verification processing of the software explained below.
[0037] In addition, the function of a personal computer performs the data input from the test-data file 23 which said false mechanism equipment 21 performs, and the output of the activation result to activation result FAIRU 24. As mentioned above, since each false mechanism of false mechanism equipment 21 is what created the mechanism of actual ATM in false, he can realize the false mechanism section of various specifications by setup of one kind of not only specification but mechanism section specification information.
[0038] **4: Explanation of control unit vicarious execution equipment ... Drawing 5 reference drawing 5 is the explanatory view of control unit vicarious execution equipment. above -- control unit vicarious execution equipment 20 -- false -- it forms UOP and false [MOP]. In this case, it realizes on a personal

computer and control unit vicarious execution equipment 20 creates false [said / false UOP and false / MOP] with software (program). Moreover, a mouse 26 is connected to said control unit vicarious execution equipment 20, and the directions at the time of a test etc. are performed on a screen.
[0039] In this case, it displays false [said / false UOP and false / MOP] on the screen on a personal computer by multi-window by superimposition. and false [which was displayed on the screen] -- it operates UOP and false [MOP] with a mouse 26 (actuation of start/stop etc.). If it does in this way, by actuation of a mouse 26, it can be operated like the time of operating UOP10 or MOP11 of ATM, and false dealings etc. can be realized.
[0040] **5: Explanation of an input data generation method ... Drawing 6 reference drawing 6 is an input data generation method explanatory view. The input data stored in said input data file 22 is created as follows.
[0041] First, an operator creates the screen data information which should be inputted using a personal computer, and stores in the screen data-information file 27. said screen data information -- false -- it is UOP and the information which displays false [MOP] on a screen, the coordinate information on the key of said screen, etc., and is the information for realizing in false the same actuation as the case where actual UOP10 and MOP11 are operated.
[0042] Moreover, the operator draws up the test specification 37. There are a test entry and an item of the contents of a test in this test specification 37, and the need matter is written down in each item. Although this test specification 37 may use what was entered in paper, what was stored in the storage of arbitration may be used. And as a generation means of input data, the input data generation tool 28 (tool by the program) is prepared for example, on a personal computer, and input data is generated using this tool.
[0043] The test specification 37 is first prepared for an input data generate time with said screen data-information file 27. And if a personal computer is operated and said input data generation tool 28 is started, first, the input data generation tool 28 will read the test specification 37 (for example, data of a flexible disk), and will search the screen data information corresponding to the contents of a test from the screen data-information file 27.
[0044] Next, the input data generation tool 28 reads the key which should be inputted, and its coordinate from the screen data information searched from the screen data-information file 27, and generates input data. The generated input data is stored in the input data file 22.
[0045] **6: Explanation of a test-data generation method ... Drawing 7 reference drawing 7 is a test-data generation method explanatory view. The test data stored in said test-data file 23 is created as follows.
[0046] First, an operator creates the test-data information which should be tested using a personal computer, and stores in the test-data information file 29. Said test-data information is the command / response information between a control section 3 and the mechanism section 4.
[0047] Moreover, the operator draws up said test specification 37. There are a test entry and an item of the contents of a test in this test specification 37, and the need matter is written down in each item. Although this test specification 37 may use what was entered in paper, what was stored in the storage of arbitration may be used. And as a generation means of a test data, the test-data generation tool 30 (tool by the program) is prepared for example, on a personal computer, and a test data is generated using this tool.
[0048] The test specification 37 is first prepared for a test-data generate time with said test-data information file 29. And if a personal computer is operated and said test-data generation tool 30 is started, first, the test-data generation tool 30 will read the test specification 37 (for example, data of a flexible disk), and will retrieve the test-data information corresponding to the contents of a test from the test-data information file 29.
[0049] Next, the test-data generation tool 30 reads a command / response information which should be transmitted and received between a control section 3 and the mechanism section 4 from the test-data information retrieved from the test-data information file 29, and generates a test data. The generated

test data is stored in the test-data file 23.
[0050] **7: Processing explanation at the time of the test by the flow chart ... Drawing 8 and drawing 9 reference drawing 8 are collection processing flow charts, and drawing 9 is a verification processing flow chart. Hereafter, processing of an example is explained based on drawing 8 and drawing 9 . In addition, each processing step is shown in S1-S17.
[0051] (1) : -- explanation of whole processing -- when testing software developed newly or software (program) which changed the part, process in order of ** of a degree, **, and ** using test equipment.
[0052] ** : generate input data and a test data automatically from test specification.
** : next input data, and a test data -- using it -- a test -- carrying out -- an activation result -- the right -- things -- a check (check by the operator) -- carrying out -- the right -- if things are checked, hold an activation result as an activation result file (master file of an activation result), and a logging file (master file of logging data) (collection processing).
[0053] ** : when software is developed newly, or when a part is changed, test using input data and a test data, compare the activation result file (master file) held by the activation result of a test, and said collection processing, and a logging file (master file), and judge whether it is the right (verification processing).
[0054] In addition, at this example, the justification of software is verified only by comparing the data of an activation result with the data of a master file. However, the justification of software may be verified by setting and comparing the data of said logging file. Hereafter, each processing is explained to a detail.
[0055] (2) : in the explanation aforementioned collection processing of collection processing, test and create a master file. in this case -- first -- control unit vicarious execution equipment 20 -- the input data of the input data file 22 -- reading -- false -- it inputs into UOP and false [MOP] (S1). this time -- control unit vicarious execution equipment 20 -- a radical [input data / said] -- a screen -- false -- it displays UOP and false [MOP].
[0056] If an operator operates a mouse 26 on this screen and directions are issued, actuation data (OP data) will be transmitted to the OP control section 9 from control unit vicarious execution equipment 20 (S2). The actuation data in this case are data corresponding to dealings actuation of a customer.
[0057] The OP control section 9 which received said actuation data (OP data) transmits the data to the SC control section 7 via the IO control section 8 (S3). Then, directions wording of a telegram is transmitted to the IO control section 8 from the SC control section 7 which received said actuation data (OP data), and a command is transmitted to false mechanism equipment 21 from (S4) and the IO control section 8 (S5).
[0058] The false mechanism equipment 21 which received said command inputs a test data automatically from the test-data file 23, and sends it to an internal false mechanism. Said false mechanism performs processing directed by said command. And the data of an activation result are stored in the activation result file 24. At this time, a response is transmitted to the IO control section 8 from false mechanism equipment 21 (S6).
[0059] An operator displays the data of the activation result file 24 on a screen after said processing termination using a personal computer etc., it checks by viewing, and the justification of software processing is verified. Consequently, if justification is checked, said activation result file 24 is held as a master file. Moreover, if the transmitted and received data between each part in the middle of said processing is stored in a logging file and justification is checked as mentioned above, it holds as a master file (S7).
[0060] (3) : explanation of verification processing ... The drawing 9 reference aforementioned verification processing is the processing which verifies the justification of the software which developed newly the data of the activation result file 24 which false mechanism equipment 21 was operated like the above, and was obtained by comparing with the master file held by said collection processing, or the software which changed the part.
[0061] this verification processing -- first -- control unit vicarious execution equipment 20 -- the input

data of the input data file 22 -- reading -- false -- it inputs into UOP and false [MOP] (S11). this time -- control unit vicarious execution equipment 20 -- a radical [input data / said] -- a screen -- false -- it displays UOP and false [MOP].
[0062] If an operator operates a mouse 26 on this screen and directions are issued, actuation data (OP data) will be transmitted to the OP control section 9 from control unit vicarious execution equipment 20 (S12). The actuation data in this case are data corresponding to dealings actuation of a customer.
[0063] The OP control section 9 which received said actuation data (OP data) transmits the data to the SC control section 7 via the IO control section 8 (S13). Then, directions wording of a telegram is transmitted to the IO control section 8 from the SC control section 7 which received said actuation data (OP data) (S14), and a command is transmitted to false mechanism equipment 21 from the IO control section 8 (S15).
[0064] The false mechanism equipment 21 which received said command inputs a test data automatically from the test-data file 23, and sends it to an internal false mechanism. Said false mechanism performs processing directed by said command using said test data. And the data of an activation result are stored in the activation result file 24. At this time, a response is transmitted to the IO control section 8 from false mechanism equipment 21 (S16).
[0065] Then, false mechanism equipment 21 compares with the data of the master file which held the activation result data stored in the activation result file 24 by said collection processing. consequently, a verification result is normal if both are in agreement -- (O.K.) -- judging (S17) -- when both are inequalities, a verification result judges with abnormalities (NG). And the information on the judgment result is transmitted to a control section 3.
[0066] Moreover, the information on said judgment result is outputted by printing or the screen display with test equipment. In addition, when a verification result is judged to be abnormalities (NG), it is notified to control unit vicarious execution equipment 20 via a control section 3, control unit vicarious execution equipment 20 inputs the following input data (dealings data) from the input data file 22, and said processing is continued.
[0067] The test of software can be performed without being dependent on the actual mechanism section as mentioned above. Moreover, the test of software can be performed through a help. Hereafter, said collection processing and verification processing are explained to a detail.
[0068] **8: Explanation of collection processing ... Drawing 10 reference drawing 10 is a collection processing explanatory view. Hereafter, said collection processing is explained based on drawing 10 .
[0069] collection processing -- first -- control unit vicarious execution equipment 20 -- the input data file 22 to input data -- reading -- the input data -- false [in control unit vicarious execution equipment 20] -- it inputs into UOP and false [MOP]. And actuation data are transmitted to a control section 3 from the control unit vicarious execution equipment 20 to which directions are given with a mouse etc. on a screen. At this time, said actuation data are transmitted to the SC control section 7 via the IO control section 8 by the control section 3.
[0070] Then, directions wording of a telegram is transmitted to the IO control section 8 from the SC control section 7, and a command is transmitted to each false mechanism of false mechanism equipment 21 from the IO control section 8. Each false mechanism of false mechanism equipment 21 reads a test data from the test-data file 23, and each false mechanism operates using a test data.
[0071] Then, with false mechanism equipment 21, if actuation based on said command is performed, the data of the activation result will be outputted to the activation result file 24. And false mechanism equipment 21 transmits the response to said command to the IO control section 8. Moreover, the data transmitted and received between the SC control section 7 and the IO control section 8 are stored in a logging file 32 in the middle of said collection processing, and the data transmitted and received between the IO control section 8 and false mechanism equipment 21 are stored in the logging file 33.
[0072] As it is the above, if collection processing is completed, an operator will check the contents of the activation result file 24 by viewing using the screen of a personal computer etc., and will verify the justification of processing of software. Moreover, the data of said logging files 32 and 33 are verified

similarly.
[0073] In addition, after said collection processing, if the right thing is verifiable with said operator, the next verification processing is performed by making said activation result file 24 and said logging files 32 and 33 into a master file, respectively. That is, the master file is created by said collection processing, and it processes in subsequent verification processings using said master file.
[0074] **9: Explanation of verification processing ... Drawing 11 reference drawing 11 is a verification processing explanatory view. Hereafter, said verification processing is explained based on drawing 11 . This verification processing is performing the same processing as said collection processing, and comparing the data of an activation result with the master file obtained by said collection processing, and is processing which verifies the justification of software (program).
[0075] verification processing -- first -- control unit vicarious execution equipment 20 -- the input data file 22 to input data -- reading -- the input data -- false [in control unit vicarious execution equipment 20] -- it inputs into UOP and false [MOP]. And if directions are given from a mouse etc. on a screen, actuation data will be transmitted to a control section 3 from control unit vicarious execution equipment 20. At this time, said actuation data are transmitted to the SC control section 7 via the IO control section 8 by the control section 3.
[0076] Then, directions wording of a telegram is transmitted to the IO control section 8 from the SC control section 7, and a command is transmitted to each false mechanism of false mechanism equipment 21 from the IO control section 8. Each false mechanism of false mechanism equipment 21 reads a test data from the test-data file 23, and operates using the test data. Then, with false mechanism equipment 21, if actuation based on said command is performed, the data of the activation result will be outputted to the activation result file 24.
[0077] Moreover, the data transmitted and received between the SC control section 7 and the IO control section 8 are stored in a logging file 32 in the middle of said verification processing, and the data transmitted and received between the IO control section 8 and false mechanism equipment 21 are stored in the logging file 33.
[0078] Then, with false mechanism equipment 21, the data of said activation result file 24 are compared with the data of activation result file 24M which are a master file, if both are in agreement, it will judge with (O.K.) with a normal verification result, and if both differ, a verification result will judge with abnormalities (NG). And the information on the judgment result is transmitted to a control section 3.
[0079] Moreover, the information on said judgment result is outputted by printing or the screen display with test equipment. In addition, when a verification result is judged to be abnormalities (NG), it is notified to control unit vicarious execution equipment 20 via a control section 3, control unit vicarious execution equipment 20 inputs the following input data (dealings data) from the input data file 22, and said processing is continued.
[0080] In addition, the justification of software is verified by comparing the data of said logging file 32 with the data of logging file 33M which are a master file about the data of a logging file 33 as compared with logging file 32M which are a master file, and the data of the result are also stored in the file of arbitration, and it enables it to verify with test equipment in said verification processing at the time of an abnormal occurrence etc. If it does in this way, verification of more positive software will be attained.
[0081] **10: Explanation of verification continuation processing ... Drawing 12 reference drawing 12 is a verification continuation processing explanatory view. Hereafter, verification continuation processing is explained based on drawing 12 . This verification continuation processing is processing performed when a verification result becomes abnormalities (NG) in said verification processing.
[0082] In said verification processing, when a verification result becomes unusual, verification processing is continued in the following procedure. ** : first, false mechanism equipment 21 transmits the notice of termination to the IO control section 8, when it judges with abnormalities (NG), as a result of performing said verification processing. ** : the IO control section 8 which received this notice

performs the directions with which delivery and the SC control section 7 continue said verification processing for said notice to the SC control section 7.
[0083] With these directions, control unit vicarious execution equipment 20 inputs the following dealings data from the input data file 22, repeats the same processing as said verification processing, and performs it. Thus, if a verification result becomes abnormalities (NG) again, the same verification processing will be continued again.
[0084] **11: The time amount of the other explanation aforementioned verification processings can be shortened as follows. That is, at the time of verification processing, to the command transmitted to false mechanism equipment 21, the actuation which returns a response from false mechanism equipment 21 is repeated, and is performed from a control section 3. In this case, verification time amount can be shortened by shortening the time amount from command reception to response transmission with false mechanism equipment 21 to the time amount which a control section 3 can receive.
[0085] Usually, after carrying out command reception with false mechanism equipment 21, although the time amount to response transmission requires most time amount since the time amount (time amount which a customer etc. operates by actual ATM etc.) to which people operate a mechanism is added, it is shortening the time amount and it becomes possible to aim at time amount compaction of the whole verification.
[0086] (Other examples) Although the example was explained above, even if it makes it this invention be a degree, it can be carried out.
(1) : it is applicable to other same equipments (for example, CD etc.) equipped with not only ATM but a control unit, a control section, and the mechanism section.
[0087] (2) : when performing verification processing, as compared with the data of a master file, the justification of software is verified for the data of an activation result file by the comparison result. However, it may be made to verify justification of software by doubling processing of [data / of the logging file which stored the transmitted and received data between false mechanism equipment and IO control section, and the logging file which stored the transmitted and received data between IO control section and SC control section / each / the data of a master file], and performing it.
[0088] (3) : false mechanism equipment and control unit vicarious execution equipment may be realized using other same computers (workstation etc.), although you may realize on a personal computer.
[0089]
[Effect of the Invention] As explained above, according to this invention, there is the following effectiveness.
(1) : software can be tested using false mechanism equipment without real actuation, and the justification of software can be verified from the activation result of false mechanism equipment. For this reason, since it is not necessary to arrange new equipment even when some mechanisms have modification, a test can be done simply.
[0090] (2) : the uninhabited test equipment which does not depend for false mechanism equipment and control unit vicarious execution equipment on a mechanism by realizing using a personal computer etc. is realizable. For this reason, since actuation by the help is not needed like before, the time amount and time and effort which a test takes can be saved.
[0091] (3) : although conventionally tested by an operator operating a control unit like the software developed newly also in the time of small-scale modification of software, and modification of the mechanism section, since it tests automatically with test equipment, time and effort and time amount can be saved by this invention.
[0092] (4) : in the conventional test, since it was testing using the mechanism accompanied by real actuation, when MEKATORABURU occurred during the test, it had taken time and effort and time amount for the MEKATORABURU discharge. However, in this invention, since the false mechanism without real actuation is used, time and effort and time amount benefit MEKATORABURU discharge like before unnecessary. Moreover, a part and test time amount without real actuation can be

shortened by using a false mechanism.
[0093] Corresponding to each claim, there is the following effectiveness outside said effectiveness.
(5) : it had false mechanism equipment which constituted the function of the mechanism section by software without real actuation from a claim 1, and when said false mechanism equipment receives the command which said control section published, it performed the actuation which inputted the test data from the test-data file prepared beforehand, and was directed by said command, and is equipped with the function which outputs the data of an activation result to an activation result file.
[0094] Therefore, software can be tested using false mechanism equipment without real actuation, and the justification of software can be verified from the activation result of false mechanism equipment. For this reason, since it is not necessary to arrange new equipment even when some mechanisms have modification, a test can be done simply.
[0095] (6) : it had control unit vicarious execution equipment which has the false control unit which constituted the function of a control unit from a claim 2 by software without real actuation, and control unit vicarious execution equipment inputted the input data from the input data file prepared beforehand, displayed it on the screen, and is equipped with the function transmit the actuation information directed on said screen to said control section.
[0096] If it does in this way, the uninhabited test equipment which does not depend for false mechanism equipment and control unit vicarious execution equipment on a mechanism by realizing using a personal computer etc. is realizable. For this reason, since actuation by the help is not needed like before, the time amount and time and effort which a test takes can be saved.
[0097] (7) : in claim 3, false mechanism equipment compares the data of an activation result file with the data of the master file prepared beforehand, and is equipped with the function to judge the justification of an activation result. Therefore, since the justification of software can be automatically judged with false mechanism equipment, time and effort and time amount can be saved.

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TECHNICAL FIELD

[Field of the Invention] It connects with Consumer Transaction Facility, such as various equipments (Automatic Tellers Machine), for example, ATM used in a financial institution, equipped with the mechanism section (device section), the control section, and the control unit that an operator etc. operates, and CD (Cash Dispenser), and this invention relates to the test equipment which tests software (program) which operates on said Consumer Transaction Facility.

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PRIOR ART

[Description of the Prior Art] Drawing 13 is the explanatory view of the conventional example. When the software (program) which operates on the processor (for example, ATM) equipped with a control unit, the mechanism section which operates based on the actuation information from said control unit, and the control section which controls the mechanism section based on the actuation information from said control unit was tested conventionally, it was carrying out as follows.
[0003] When the software which operates on said processor was developed newly, or when a part was changed (a functional addition, failure correction, etc.), the justification of software needed to be verified and it was testing using actual equipment.
[0004] For example, said processor (for example, ATM) was equipped with the mechanism section 4 which consists of two or more mechanism sections (device section), the control section 3, and the control unit 2 which consists of two or more control units, it tested using this processor and the justification of said software was verified. The procedure of a test is as follows.
[0005] (1) : after inputting the software for a test (program) into a control section 3, by operating a control unit 2 toward a processor, an operator inputs the data of a test entry and operates a processor.
[0006] (2) : in a processor, the mechanism section 4 operates because a control section 3 controls mechanism section 4 ** based on the actuation information from a control unit 2, and the mechanism section 4 performs predetermined processing directed from the control section 3. And the printout of the data of said processing result is carried out to a print form according to a printing mechanism, or said data are displayed on a control unit 2 on the screen of the delivery control unit 2 from a control section 3.
[0007] (3) : an operator checks the processing result of the mechanism section 4 by viewing by the indicative data of said printing information and screen.
Although the justification of software is verified with the above procedure, when small-scale reconstruction arises for software for example, or even when reconstruction arises in a control unit 2 and the mechanism section 4, in order to test the target software, an operator repeats the same processing as said processing, and performs it.

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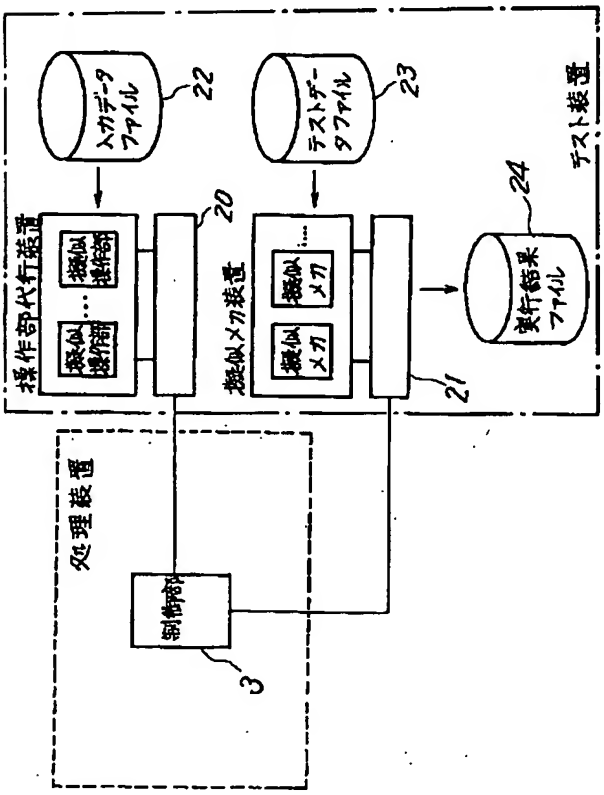
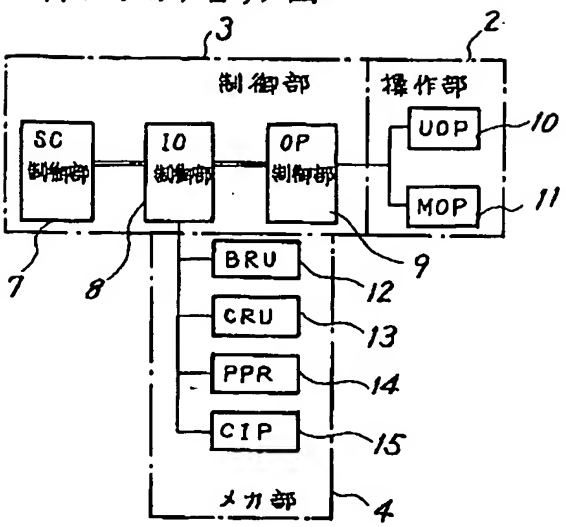
DRAWINGS

[Drawing 1]
本発明の原理説明図



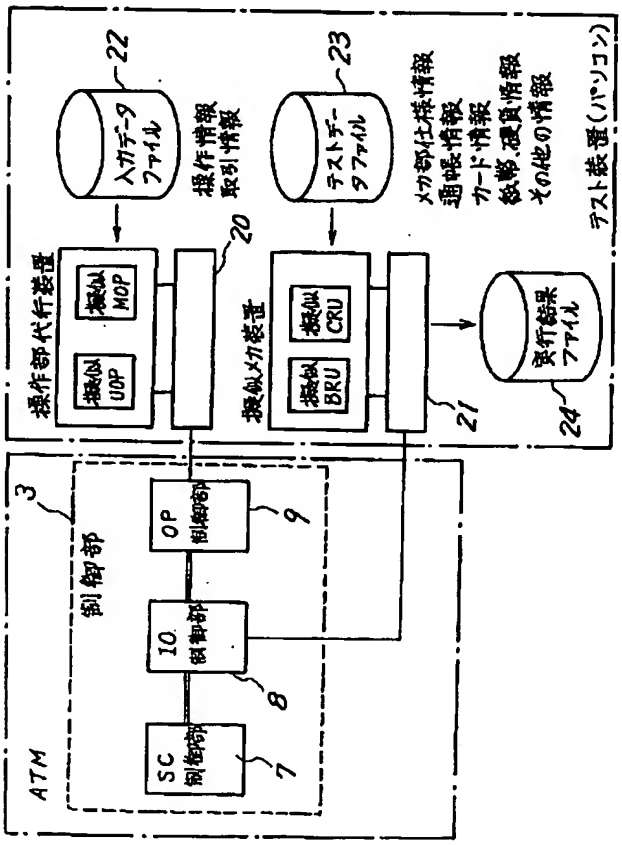
[Drawing 2]

ATMのブロック図



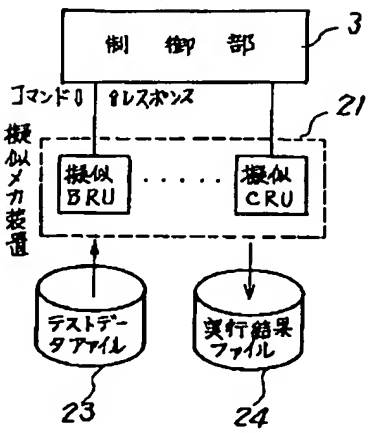
[Drawing 3]

実施例の装置説明図

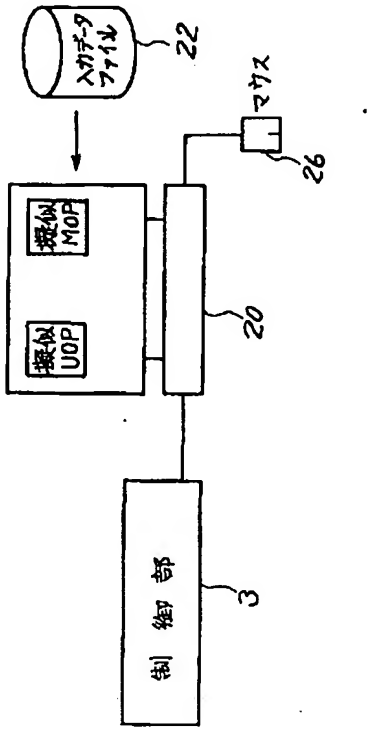


[Drawing 4]

擬似メカ装置の説明図

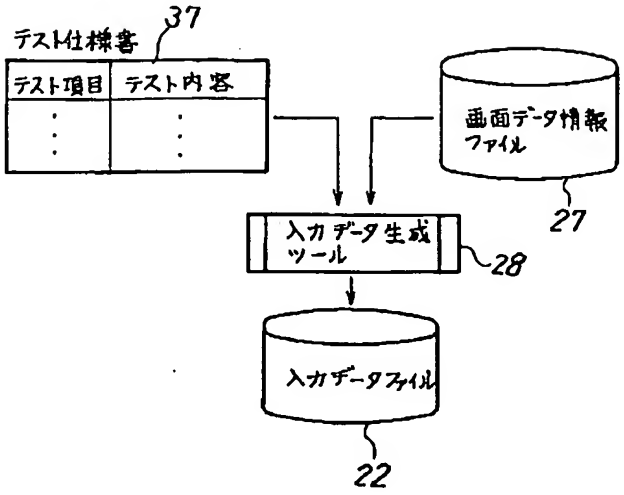


[Drawing 5]
操作部代行装置の説明図

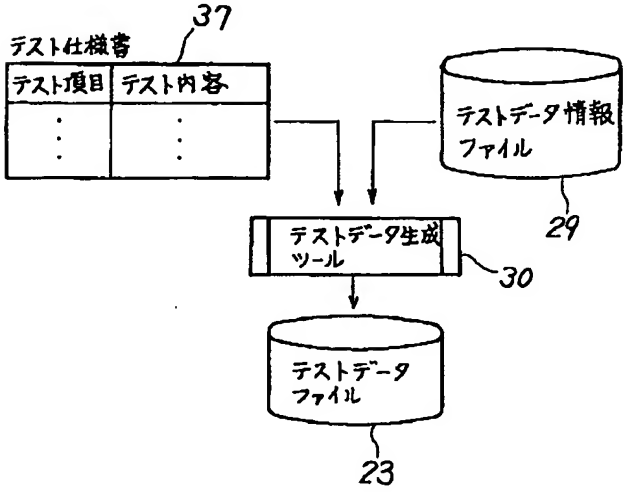


[Drawing 6]

入力データ生成方法説明図

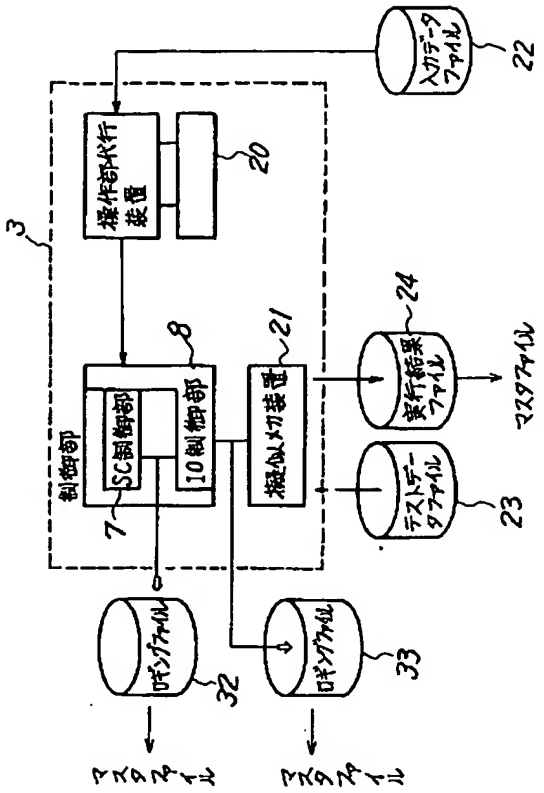


[Drawing 7]
テストデータ生成方法説明図



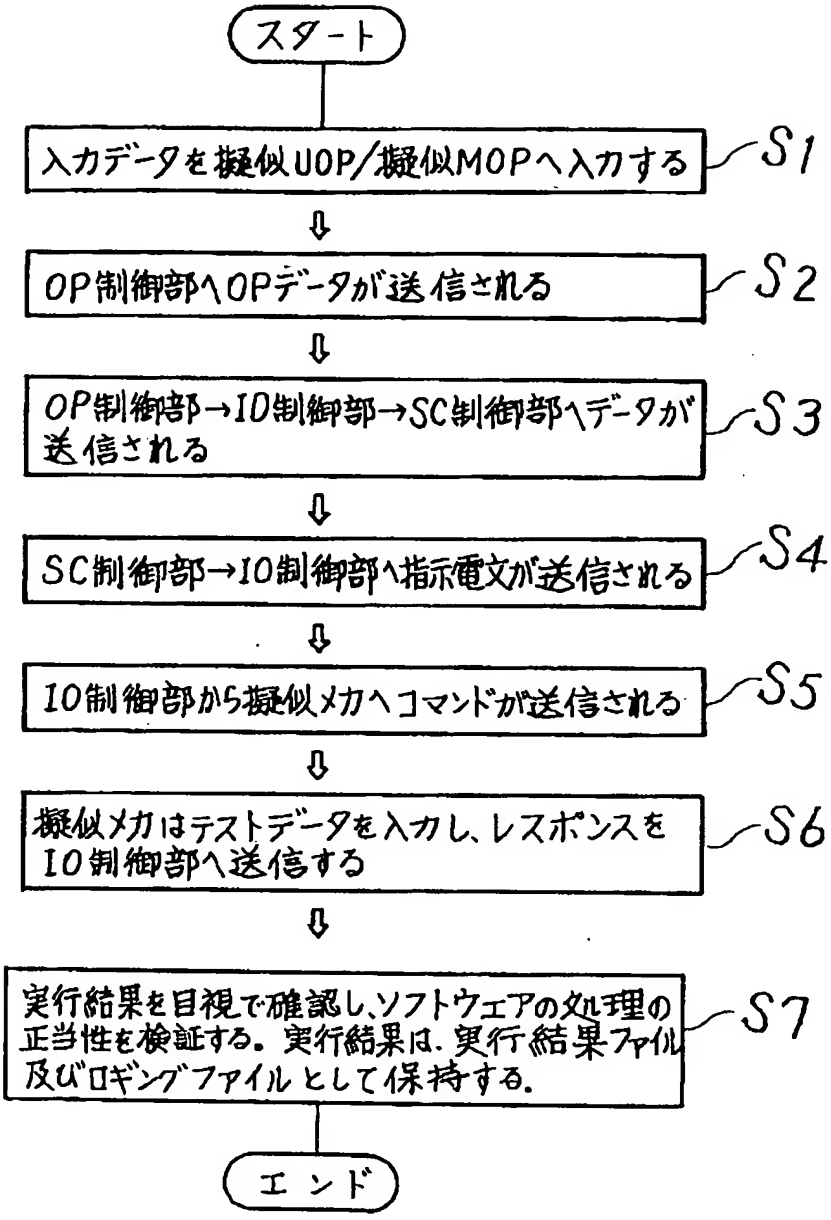
[Drawing 10]

収集処理説明図



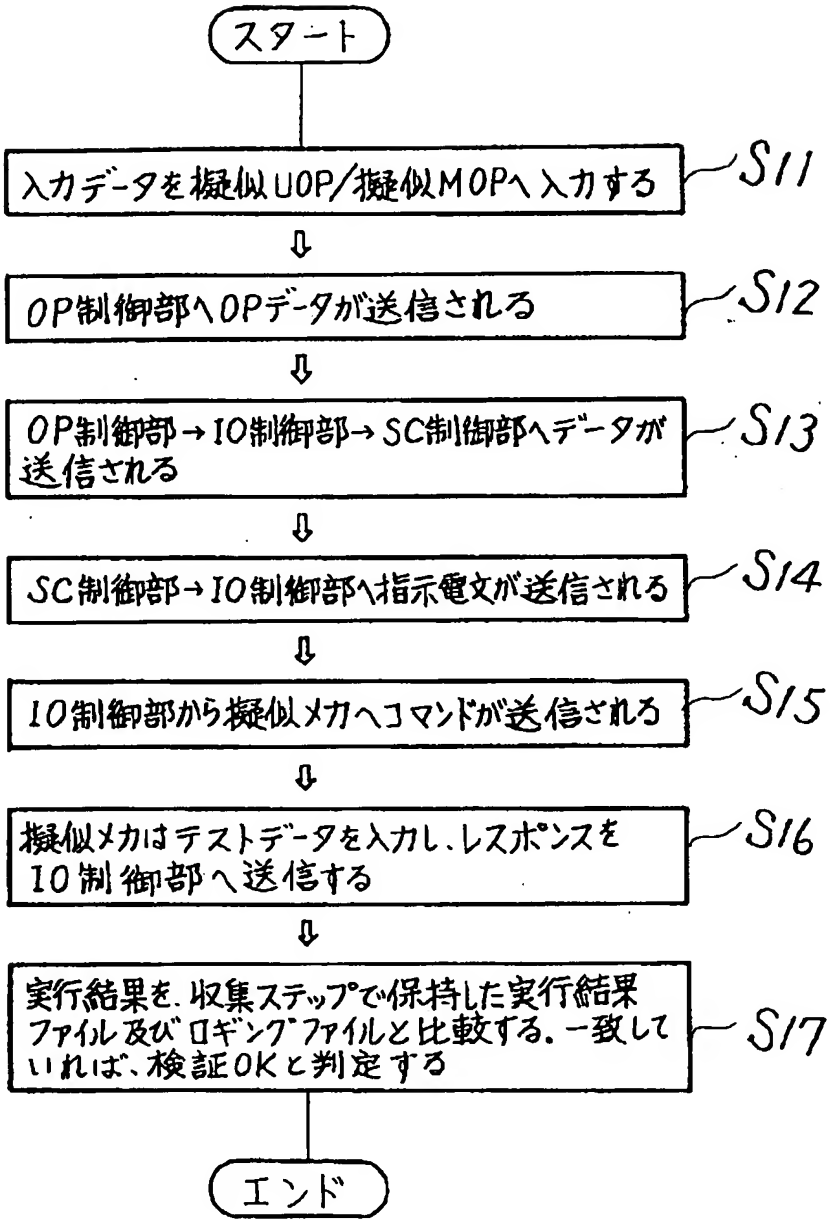
[Drawing 8]

収集処理フローチャート



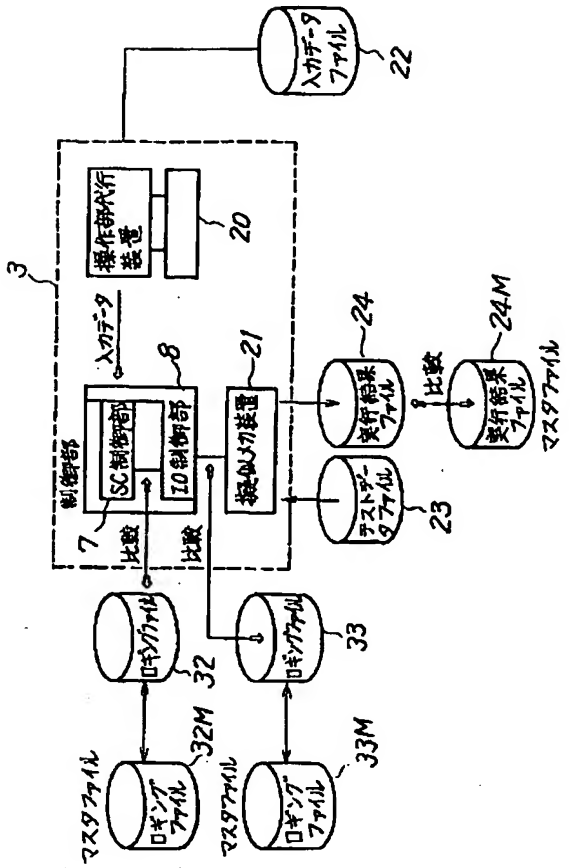
[Drawing 9]

検証処理フローチャート



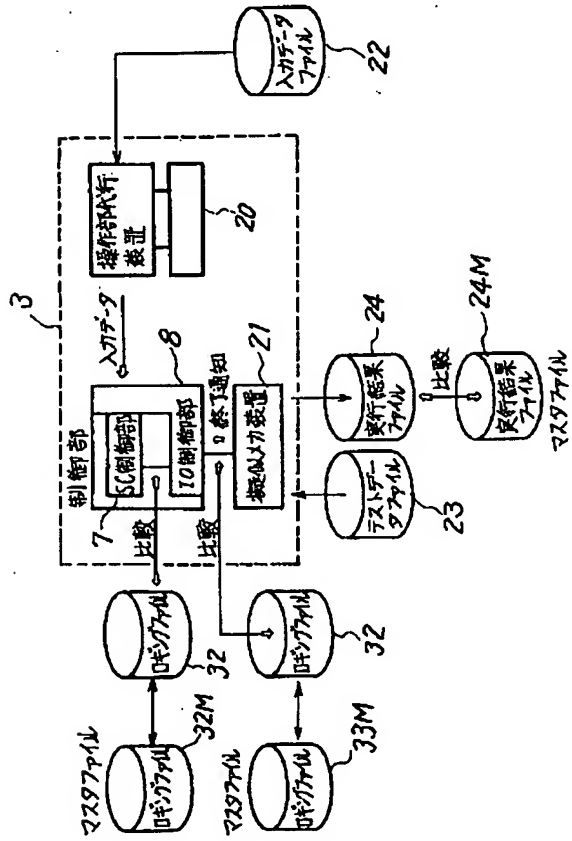
[Drawing 11]

検証処理説明図

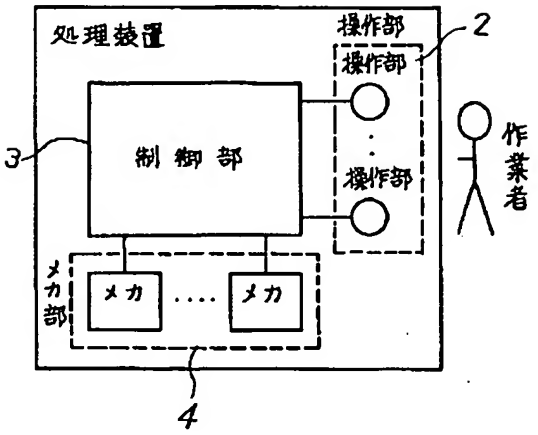


[Drawing 12]

検証続行処理説明図



[Drawing 13]
従来例の説明図



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CLAIMS

[Claim(s)]
[Claim 1] The device driver software automatic creation program for carrying out automatic creation of the device driver software, It is the peripheral device which can communicate mutually to the host computer which has a software creation program execution means to perform this program. As opposed to the support of the control command from said host computer by said device driver software automatic creation program execution, and the inquiry about the parameter of a proper The peripheral device characterized by having a response program execution means to perform the response program and said response program for transmitting the control command currently supported and the parameter of a proper to said host computer.
[Claim 2] It is the peripheral device which can communicate mutually to the host computer which has a program execution means to perform the program and this program for carrying out automatic creation of the device driver software. An analysis means to analyze the inquiry from said host computer, and the inquiry from said host computer When it is the support of the control command which is needed in order to create said device driver software, and the inquiry at the time of said program execution about the parameter of a proper The peripheral device characterized by having a response creation means to create the parameter of the control command or the proper to this inquiry, and a response transmitting means to transmit the control command created from said response creation means, or the parameter of a proper to said host computer.
[Claim 3] As opposed to the support of control command, and the inquiry about the parameter of a proper While performing said inquiry to the peripheral device which has the 1st program execution means which performs the response program and this response program for transmitting the control command currently supported and the parameter of a proper, and said peripheral device The device driver software automatic creation program for carrying out automatic creation of the device driver software of the peripheral device made into the purpose based on the control command transmitted from said peripheral device to this inquiry, and the parameter of a proper, The device driver software automatic creation system characterized by having the 2nd program execution means which performs said device driver software automatic creation program.
[Claim 4]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention relates to the automatic creation approach of the device driver software automatic creation system which creates automatically the device driver software of the peripheral device which can communicate to a host computer and mutual, and the peripheral device made into the purpose, and device driver software, and the inquiry response approach of the peripheral device which answers a list to the inquiry from a host computer.
[0002]
[Description of the Prior Art] In order to operate a peripheral device on a host computer conventionally, the device driver software corresponding to the peripheral device made into the purpose needed to be installed, and each peripheral-device manufacturer has created and offered such device driver software with the peripheral device. Creation of such device driver software designed and coded the device driver software corresponding to each model based on specification, and each peripheral-device manufacturer debugged further and has developed it.
[0003]
[Problem(s) to be Solved by the Invention] However, it was the activity which a developer has to design device driver software, and must code it in the creation approach of the conventional device driver software mentioned above for every model, and must debug, and requires time amount and special knowledge.
[0004] This invention aims at offering the automatic creation approach of the peripheral device which can automate creation of device driver software, a device driver software automatic creation system, and device driver software, and the inquiry response approach of a peripheral device in view of the above-mentioned conventional trouble.
[0005]
[Means for Solving the Problem] In order to attain the above-mentioned purpose, the peripheral device of the 1st invention The device driver software automatic creation program for carrying out automatic creation of the device driver software, It is the peripheral device which can communicate mutually to the host computer which has a software creation program execution means to perform this program. As opposed to the support of the control command from said host computer by said device driver software automatic creation program execution, and the inquiry about the parameter of a proper It has a response program execution means to perform the response program and said response program for transmitting the control command currently supported and the parameter of a proper to said host computer.
[0006] In order to attain the above-mentioned purpose, the peripheral device of the 2nd invention It is the peripheral device which can communicate mutually to the host computer which has a program execution means to perform the program and this program for carrying out automatic creation of the device driver software. An analysis means to analyze the inquiry from said host computer, and the inquiry from said host computer When it is the inquiry by said program execution about the support of

the control command which is needed in order to create said device driver software, and the parameter of a proper It has a response creation means to create the parameter of the control command or the proper to this inquiry, and a response transmitting means to transmit the control command created from said response creation means, or the parameter of a proper to said host computer.

[0007] In order to attain the above-mentioned purpose, the device driver software automatic creation system of the 3rd invention As opposed to the support of control command, and the inquiry about the parameter of a proper While performing said inquiry to the peripheral device which has the response program which transmits the control command currently supported and the parameter of a proper, and a response program execution means to perform this response program, and said peripheral device The driver software creation program which creates the device driver software of the peripheral device made into the purpose based on the control command transmitted from said peripheral device to this inquiry, and the parameter of a proper, It has the 2nd program execution means which performs said driver software creation program.

[0008] In order to attain the above-mentioned purpose, the automatic creation approach of the device driver software the 4th invention The process which asks a peripheral device the control command which is needed in order to create the device driver software of the target peripheral device, and the parameter of a proper, The process which receives the control command transmitted from said peripheral device, and the parameter of a proper, It has the process which creates the device driver software of the peripheral device made into the purpose, and the process which installs the created device driver software in a host computer from the parameter of the control command and the proper which received.

[0009] In order to attain the above-mentioned purpose, the inquiry response approach of the peripheral device the 5th invention The support of the control command sent from this host computer at the time of the device driver software automatic creation program execution on a host computer and an inquiry of the parameter of a proper are received. The response creation process which creates the response to an inquiry of the class distinguished at said class distinction process out of the parameter of the class distinction process which distinguishes the class of the inquiry, and a control command or a proper, The response transmitting process of transmitting the response created according to said response creation process to a host computer is performed on the peripheral device connected to said host computer.

[0010]

[Function] The control command currently supported by the above-mentioned configuration to the inquiry from the host computer at the time of device driver software automatic creation program execution according to the peripheral device of the 1st invention when a response program execution means performs a response program, and the parameter of a proper are transmitted to a host computer. Thereby, the suitable response for a peripheral device can be made to perform to the various inquiries from the device driver software automatic creation program on a host computer.

[0011] According to the peripheral device of the 2nd invention, when a response creation means is the inquiry about the support of the control command for which the inquiry from a host computer is needed in order to create device driver software, and the parameter of a proper, the parameter of the control command or the proper to this inquiry is created, and a response transmitting means transmits the created control command or the parameter of a proper to a host computer. Thereby, the suitable response for a peripheral device can be made to perform to the various inquiries from the device driver software automatic creation program on a host computer.

[0012] According to the device driver software automatic creation system of the 3rd invention, a peripheral device transmits the control command currently supported and the parameter of a proper to the support of control command, and the inquiry about the parameter of a proper by the response program execution by the response program execution means. Moreover, a host computer creates the device driver software of the peripheral device made into the purpose based on the control command transmitted from the peripheral device to this inquiry, and the parameter of a proper by the device driver software automatic creation program execution by the 2nd program execution means while

performing said inquiry to said peripheral device, for example. Thereby, the device driver software of the peripheral device made into the purpose can be created automatically.

[0013] The control command which according to the automatic creation approach of the device driver software the 4th invention is needed in order to create the device driver software of the peripheral device made into the purpose, and the parameter of a proper are asked to a peripheral device, the control command transmitted from said peripheral device and the parameter of a proper are received, the device driver software of the peripheral device made into the purpose from the parameter of the control command and proper which received is created, and the created device driver software is installed in a host computer. Thereby, the device driver software of the peripheral device made into the purpose can be created automatically.

[0014] A peripheral device creates the response to an inquiry of the class which received the support of the control command sent from the host computer, and the inquiry of the parameter of a proper, distinguished the class of the inquiry, and was distinguished at said class distinction process out of control command or the parameter of a proper for example, at the time of device driver software automatic creation program execution, and, according to the inquiry response approach of the peripheral device the 5th invention, transmits the created response to a host computer. Thereby, the suitable response for a peripheral device can be made to perform to the various inquiries from the device driver software automatic creation program on a host computer.

[0015]

[Example] Hereafter, the example of this invention is explained with reference to a drawing.

[0016] Drawing 1 is the mimetic diagram of the host computer which constitutes the device driver software automatic creation system concerning the example of this invention, and a peripheral device.

[0017] The host computer 1 and peripheral device 2 which constitute the device driver software automatic creation system of this example are mutually connected through the telecommunication cable 3 or the electric wave 4.

[0018] The peripheral device 2 of this example consists of printers, it is in the condition which can communicate to a host computer 1 and mutual, and the response is constituted possible to the inquiry from a host computer 1. That is, the inquiry from a host computer 1 to the control command of a printer 2 or the parameter of a proper is transmitted to a printer 2 body side through a telecommunication cable 3 or an electric wave 4. The printer 2 which received the inquiry transmits the response to a demand to a host computer 1 side through a telecommunication cable 3 or an electric wave 4.

[0019] Drawing 2 is the block diagram showing the internal configuration of the device driver software automatic creation system of this example mentioned above.

[0020] Ten in drawing is CPU which controls the host computer 1 whole, and memory 11 is connected to this CPU10. Memory 11 is used as a work area at the time of actuation of CPU10, and memorizes various data temporarily while it memorizes the device driver software automatic creation program (refer to the flow chart of below-mentioned drawing 4) performed by CPU10. Furthermore, the BUISU play 12 of CRT or liquid crystal which displays the various data other than the printer 2 mentioned above, and the keyboard 13 and mouse 14 which are operated by the operator and used for selection of various commands or data are connected to CPU10.

[0021] Drawing 3 is the block diagram showing the configuration of the printer 2 mentioned above.

[0022] This printer 2 has CPU21 which controls the whole printer, and the memory 22 connected to this CPU21. Memory 22 is memory which memorizes the program (response program: refer to the flow chart of below-mentioned drawing 5) performed by CPU21 for analyzing the inquiry from a host computer 1 and answering. Furthermore, the bidirectional interface 23 is connected to CPU21. This bidirectional interface 23 is the part which takes an interface with a host computer 1, and is an interface in which two-way communication is possible.

[0023] If the inquiry from a host computer 1 is transmitted to the bidirectional interface 23 by the side of a printer 2 by the cable 2 or the electric wave 4, it will judge whether the transmitted data are the demand of an inquiry, and whether CPUs21 are the usual print data, and, in the demand of an inquiry,

will shift at the answer mode to a host computer 1. Thereby, it can answer promptly to the inquiry sent from a host computer 1.

[0024] Drawing 4 is the flow chart of the device (printer) driver software automatic creation program of this example performed by CPU10 of the above-mentioned host computer 1.

[0025] First, at step S1, a printer 2 is chosen using directions devices, such as a keyboard 13 or a mouse 14, from the classes of device driver software to create.

[0026] In this way, if the class of device driver software to create is determined as printer driver software, it will progress to step S2, and CPU10 of a host computer 1 secures memory required for creation of printer driver software, and loads a program. And it progresses to step S3 and control command required in order to create printer driver software, and the parameter of a proper are asked to a printer 2. Next, it progresses to step S4, and it stands by in order to receive the transmission from a printer 2. If the response from a printer 2 side is received, the next inquiry will be transmitted to a printer 2.

[0027] In this way, if it progresses to step S5 and all required control command and parameters of a proper are determined, it will progress to step S6 and the code of the device driver software corresponding to the printer 2 used as the purpose will be created. In code generation, an inquiry to return (step S7) and a printer 2 can be suitably performed to step S3.

[0028] The generated code is compiled at the following step S8. When a compile error occurs at this time, it is possible to perform an inquiry to the return printer 2 again to step S3 based on the part considered to be (step S9) and fault. And in step S10, the created object and the library currently created beforehand are linked. At this time, when a link error occurs, it is possible to perform an inquiry to return and a printer 2 again to step S3 based on the part considered to be (step S11) and fault.

[0029] Thus, the created printer driver software is installed and set up in a host computer 1 at step S12.

[0030] Drawing 5 is the flow chart of the response program for analyzing the inquiry from a host computer 1 and answering in the printer driver software automatic creation system of this example, and this program is performed by CPU21 of a printer 2.

[0031] First, at step S21, the contents of the inquiry transmitted from the host computer 1 are analyzed. If the analysis result here is effective, it will progress to step S22, and the suitable response to an inquiry is created out of control command or the parameter of a proper. Next, it progresses to step S23, the response to an inquiry is transmitted to a host computer 1, and it stands by for the inquiry from the following host computer 1. This program is ended by termination in inquiry mode.

[0032] As mentioned above, in the printer driver software automatic creation system of this example which has a response program on a printer driver software automatic creation program and a printer 2 on a host computer 1, control command and the parameter of immobilization are asked to a printer 2, and from the response of the printer 2 to the inquiry, a printer driver software automatic creation program can create corresponding printer driver software automatically, and can do easily the creation activity of the printer driver software which needed time amount and special knowledge till then.

[0033] In addition, although the peripheral device was carried out and being explained by this example taking the case of the printer, even if it is a plotter, a scanner, a display, a mouse, a CD-ROM drive, etc., it is applicable similarly, for example.

[0034]

[Effect of the Invention] As explained to the detail above, when a response program execution means performs a response program, according to the peripheral device of the 1st invention Since the control command currently supported and the parameter of a proper are transmitted to a host computer to the inquiry from the host computer at the time of device driver software automatic creation program execution To the various inquiries from the device driver software automatic creation program on a host computer, the suitable response for a peripheral device can be made to perform, and it becomes possible to create device driver software automatically.

[0035] According to the peripheral device of the 2nd invention, a response creation means When the inquiry from a host computer is an inquiry about the support of the control command which is needed in order to create device driver software, and the parameter of a proper The parameter of the control command or the proper to this inquiry is created. A response transmitting means Since the created control command or the parameter of a proper is transmitted to a host computer To the various inquiries from the driver software creation program on a host computer, the suitable response for a peripheral device can be made to perform, and it becomes possible to create device driver software automatically.

[0036] According to the device driver software automatic creation system of the 3rd invention, a peripheral device The control command currently supported and the parameter of a proper are transmitted to the support of control command, and the inquiry about the parameter of a proper. For example, a host computer Since the device driver software of the peripheral device made into the purpose is created based on the control command transmitted from the peripheral device to this inquiry, and the parameter of a proper while performing said inquiry to said peripheral device It becomes possible to create the device driver software of the target peripheral device automatically.

[0037] According to the automatic creation approach of the device driver software the 4th invention, the control command which is needed in order to create the device driver software of the peripheral device made into the purpose, and the parameter of a proper are asked to a peripheral device. The control command transmitted from said peripheral device and the parameter of a proper are received. Since the device driver software which created the device driver software of the peripheral device made into the purpose, and was created from the parameter of the control command and proper which received is installed in a host computer It becomes possible to create the device driver software of the target peripheral device automatically.

[0038] According to the inquiry response approach of the peripheral device the 5th invention, a peripheral device Receive the support of the control command sent from the host computer, and an inquiry of the parameter of a proper, and the class of the inquiry is distinguished. Since the response to an inquiry of the class distinguished at said class distinction process out of control command or the parameter of a proper is created and the created response is transmitted to a host computer To the various inquiries from for example, the device driver software automatic creation program on a host computer, the suitable response for a peripheral device can be made to perform, and it becomes possible to create device driver software automatically.

[Translation done.]

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TECHNICAL FIELD

[Industrial Application] This invention relates to the automatic creation approach of the device driver software automatic creation system which creates automatically the device driver software of the peripheral device which can communicate to a host computer and mutual, and the peripheral device made into the purpose, and device driver software, and the inquiry response approach of the peripheral device which answers a list to the inquiry from a host computer.

[Translation done.]

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PRIOR ART

[Description of the Prior Art] In order to operate a peripheral device on a host computer conventionally, the device driver software corresponding to the peripheral device made into the purpose needed to be installed, and each peripheral-device manufacturer has created and offered such device driver software with the peripheral device. Creation of such device driver software designed and coded the device driver software corresponding to each model based on specification, and each peripheral-device manufacturer debugged further and has developed it.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the mimetic diagram of the host computer which constitutes the device driver software automatic creation system concerning the example of this invention, and a peripheral device.
[Drawing 2] It is the block diagram showing the internal configuration of the device driver software automatic creation system which consists of equipment shown in drawing 1 .
[Drawing 3] It is the block diagram showing the configuration of a printer 2.
[Drawing 4] It is the flow chart of the printer driver software automatic creation program of an example.
[Drawing 5] It is the flow chart of the response program of an example.
[Description of Notations]
1 Host Computer
2 Peripheral Device
3 Telecommunication Cable
4 Electric Wave
10,21 CPU
11 22 Memory
13 Keyboard
14 Mouse
23 Bidirectional Interface

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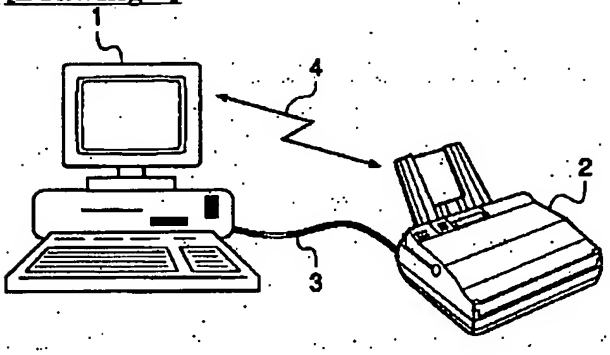
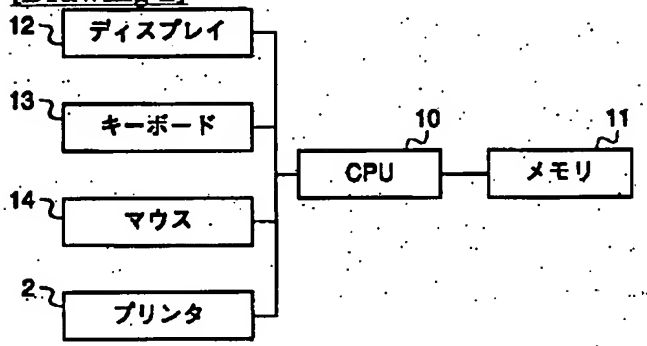
3.In the drawings, any words are not translated.

DRAWINGS

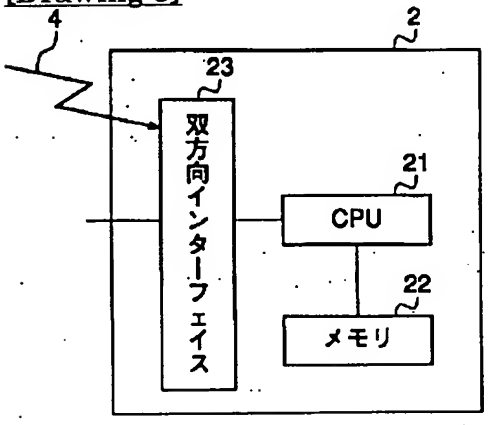
[Drawing 1]



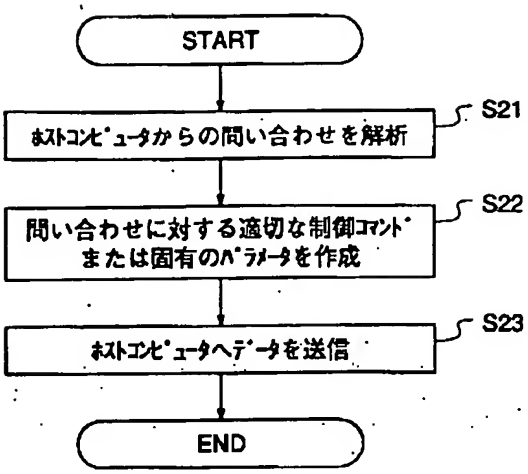
[Drawing 2]



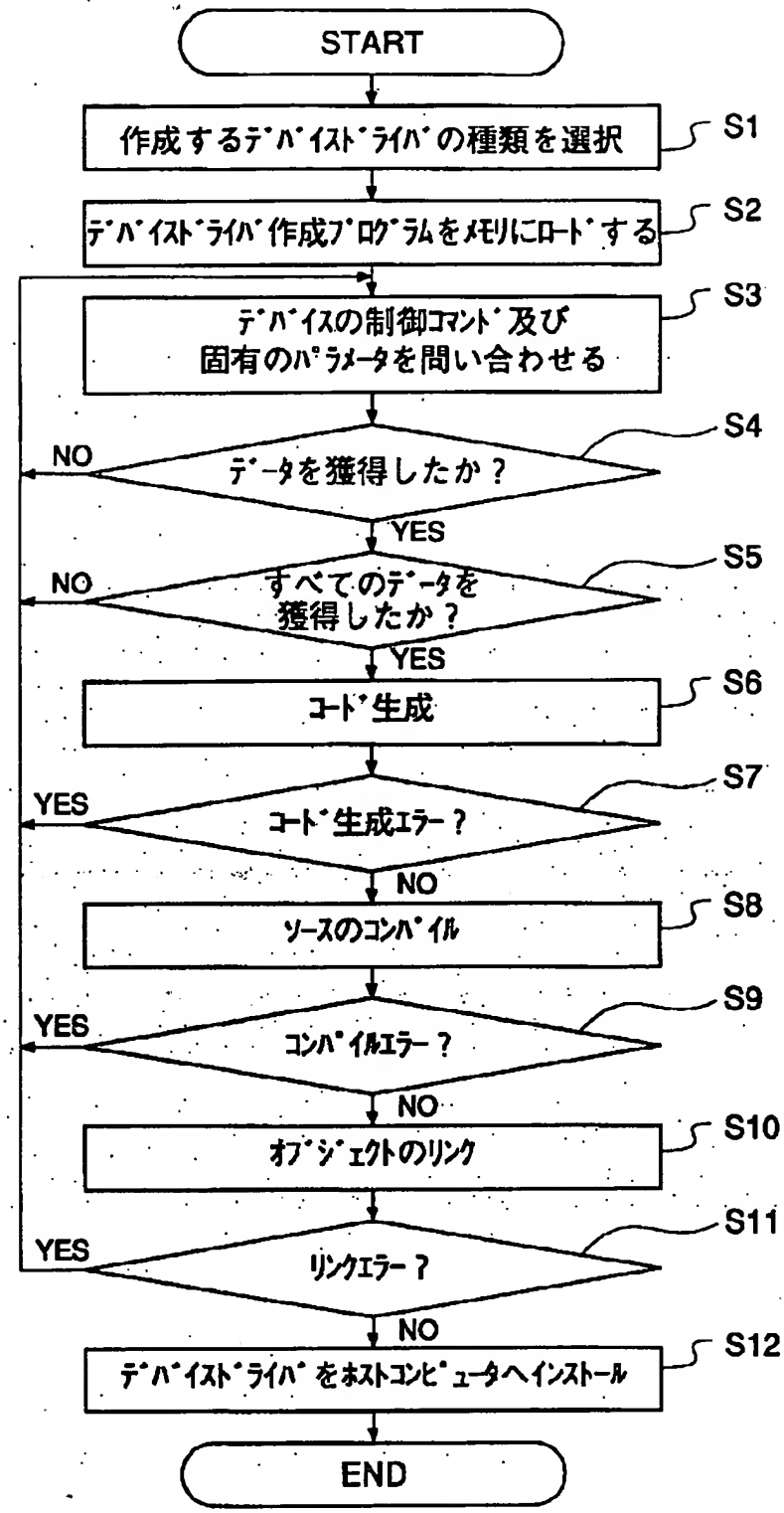
[Drawing 3]



[Drawing 5]


START
ﾎｽﾄｺﾝﾋﾟｭｰﾀからの問い合わせを解析
S21
問い合わせに対する適切な制御ｺﾏﾝﾄﾞ
または固有のﾊﾟﾗﾒｰﾀを作成
S22
ﾎｽﾄｺﾝﾋﾟｭｰﾀへﾃﾞｰﾀを送信
S23
END

[Drawing 4]



[Translation done.]